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IBM Technical Disclosure Bulletins

Search: 10/692129

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Search History

DATE: Sunday, January 07, 2007 **Purge Queries** Printable Copy
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Set Name side by side	Query	Hit Count	Set Name result set
	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; THES=ASSIGNEE; PLUR=YES; OP=OR		
L12	L11 not l10	11	L12
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L8	L6 and "down-link".clm. and "up-link".clm.	1	L8
L7	L6 and downlink$.clm. and uplink$.clm.	1	L7
L6	L5 and (UAV$ or unmanned$).clm.	160	L6
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L3	UAV$ or unmanned$	18475	L3
DB=PGPB; THES=ASSIGNEE; PLUR=YES; OP=OR			
L2	L1 and (ident$ with instruct$)	1	L2
L1	20050094851	1	L1

END OF SEARCH HISTORY

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Search Results - Record(s) 1 through 5 of 5 returned.

☐ 1. Document ID: US 20060167622 A1

L10: Entry 1 of 5 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167622
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167622 A1

TITLE: Navigating UAVs in formations

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/206; 701/3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw D

☐ 2. Document ID: US 20060167599 A1

L10: Entry 2 of 5 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167599
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167599 A1

TITLE: Identifying a UAV landing location

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/16; 340/947

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 3. Document ID: US 20060167597 A1

L10: Entry 3 of 5 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167597
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167597 A1

TITLE: Enabling services on a UAV

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/3; 701/206

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 4. Document ID: US 20050094851 A1

L10: Entry 4 of 5 File: PGPB May 5, 2005

PGPUB-DOCUMENT-NUMBER: 20050094851
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050094851 A1

TITLE: Navigating a UAV with telemetry through a socket

PUBLICATION-DATE: May 5, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 382/106; 343/705, 382/107, 382/108, 382/154, 398/121, 701/2, 701/3, 701/36

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 5. Document ID: US 6056237 A

L10: Entry 5 of 5 File: USPT May 2, 2000

US-PAT-NO: 6056237
DOCUMENT-IDENTIFIER: US 6056237 A

TITLE: Sonotube compatible unmanned aerial vehicle and system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. D

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Search Results - Record(s) 1 through 10 of 11 returned.

☐ 1. Document ID: US 20060217877 A1

L12: Entry 1 of 11 File: PGPB Sep 28, 2006

PGPUB-DOCUMENT-NUMBER: 20060217877
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060217877 A1

TITLE: NAVIGATING A UAV WITH ON-BOARD NAVIGATION ALGORITHMS WITH FLIGHT DEPICTION

PUBLICATION-DATE: September 28, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse J.W.	Cedar Park	TX	US
Thorson; Derral C.	Austin	TX	US

US-CL-CURRENT: 701/206; 701/23

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 2. Document ID: US 20060167596 A1

L12: Entry 2 of 11 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167596
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167596 A1

TITLE: Depicting the flight of a formation of UAVs

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/3; 701/301

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 3. Document ID: US 20060102798 A1

L12: Entry 3 of 11 File: PGPB May 18, 2006

PGPUB-DOCUMENT-NUMBER: 20060102798
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060102798 A1

TITLE: Unmanned biplane for airborne reconnaissance and surveillance having staggered and gapped wings

PUBLICATION-DATE: May 18, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Cox; Beverly	San Antonio	TX	US
Dews; Hampton	Medina	TX	US
Nyroth; Nicholas	San Antonio	TX	US

US-CL-CURRENT: 244/190; 244/45R

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 4. Document ID: US 20060058928 A1

L12: Entry 4 of 11 File: PGPB Mar 16, 2006

PGPUB-DOCUMENT-NUMBER: 20060058928
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060058928 A1

TITLE: Programmable autopilot system for autonomous flight of unmanned aerial vehicles

PUBLICATION-DATE: March 16, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Beard; Randal W.	Orem	UT	US
Johnson; Walter H.	Provo	UT	US
Christiansen; Reed	Simi Valley	CA	US
Hintze; Joshua M.	Provo	UT	US
McLain; Timothy W.	Provo	UT	US

US-CL-CURRENT: 701/11; 244/175

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 5. Document ID: US 20050090972 A1

L12: Entry 5 of 11 File: PGPB Apr 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050090972
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050090972 A1

TITLE: Navigating a UAV

PUBLICATION-DATE: April 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 701/206; 701/200, 701/213

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 6. Document ID: US 20050090945 A1

L12: Entry 6 of 11 File: PGPB Apr 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050090945
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050090945 A1

TITLE: Navigating a UAV with a remote control device

PUBLICATION-DATE: April 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 701/2; 701/213, 701/3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 7. Document ID: US 7130741 B2

L12: Entry 7 of 11 File: USPT Oct 31, 2006

US-PAT-NO: 7130741
DOCUMENT-IDENTIFIER: US 7130741 B2

TITLE: Navigating a UAV with a remote control device

PRIOR-PUBLICATION:

DOC-ID	DATE
US 20050090945 A1	April 28, 2005

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 8. Document ID: US 7107148 B1

L12: Entry 8 of 11 File: USPT Sep 12, 2006

US-PAT-NO: 7107148
DOCUMENT-IDENTIFIER: US 7107148 B1

TITLE: Navigating a UAV with on-board navigation algorithms with flight depiction

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 9. Document ID: US 6856894 B1

L12: Entry 9 of 11 File: USPT Feb 15, 2005

US-PAT-NO: 6856894
DOCUMENT-IDENTIFIER: US 6856894 B1

TITLE: Navigating a UAV under remote control and manual control with three dimensional flight depiction

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 10. Document ID: US 6813559 B1

L12: Entry 10 of 11 File: USPT Nov 2, 2004

US-PAT-NO: 6813559
DOCUMENT-IDENTIFIER: US 6813559 B1

TITLE: Orbiting a waypoint

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

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☐ 11. Document ID: US 6626398 B1

L12: Entry 11 of 11 File: USPT Sep 30, 2003

US-PAT-NO: 6626398
DOCUMENT-IDENTIFIER: US 6626398 B1

TITLE: Unmanned biplane for airborne reconnaissance and surveillance having staggered and gapped wings

Terms	Documents
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L2: Entry 1 of 1 File: PGPB May 5, 2005

PGPUB-DOCUMENT-NUMBER: 20050094851
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050094851 A1

TITLE: Navigating a UAV with telemetry through a socket

PUBLICATION-DATE: May 5, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	COUNTRY	TYPE CODE
INTERNATIONAL BUSINESS MACHINES CORPORATION	ARMONK	NY		02

APPL-NO: 10/692129 [PALM]
DATE FILED: October 23, 2003

INT-CL-PUBLISHED: [07] G06K 9/00, H04B 10/00, G06F 7/00, G05D 1/00, H01Q 1/28, H04N 9/47

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPP	G05 D 1/02	20060101

US-CL-PUBLISHED: 382/106; 382/107, 382/108, 382/154, 398/121, 701/002, 701/003, 701/036, 343/705
US-CL-CURRENT: 382/106; 343/705, 382/107, 382/108, 382/154, 398/121, 701/2, 701/3, 701/36

REPRESENTATIVE-FIGURES: 5

ABSTRACT:

Navigating a UAV, including receiving in a remote control device a user's selection of a GUI map pixel that represents a waypoint for UAV navigation, the pixel having a location on the GUI; mapping the pixel's location on the GUI to Earth coordinates of the waypoint; receiving downlink telemetry, including a starting position from a GPS receiver on the UAV, from the UAV through a socket on the remote control

device; calculating a heading in dependence upon the starting position, the coordinates of the waypoint, and a navigation algorithm; identifying flight control instructions for flying the UAV on the heading; and transmitting uplink telemetry, including the flight control instructions, through the socket to the UAV. In some embodiments the UAV is piloted, under control of a navigation computer on the UAV, from the starting position to the waypoint in accordance with a navigation algorithm.

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L2: Entry 1 of 1 File: PGPB May 5, 2005

DOCUMENT-IDENTIFIER: US 20050094851 A1
TITLE: Navigating a UAV with telemetry through a socket

Abstract Paragraph:
Navigating a UAV, including receiving in a remote control device a user's selection of a GUI map pixel that represents a waypoint for UAV navigation, the pixel having a location on the GUI; mapping the pixel's location on the GUI to Earth coordinates of the waypoint; receiving downlink telemetry, including a starting position from a GPS receiver on the UAV, from the UAV through a socket on the remote control device; calculating a heading in dependence upon the starting position, the coordinates of the waypoint, and a navigation algorithm; identifying flight control instructions for flying the UAV on the heading; and transmitting uplink telemetry, including the flight control instructions, through the socket to the UAV. In some embodiments the UAV is piloted, under control of a navigation computer on the UAV, from the starting position to the waypoint in accordance with a navigation algorithm.

Pre-Grant Publication (PGPub) Document Number:
20050094851

Summary of Invention Paragraph:
[0009] More particularly, methods, systems, and products are disclosed in this specification for navigating a UAV. Typical embodiments include receiving in a remote control device a user's selection of a GUI map pixel that represents a waypoint for UAV navigation, the pixel having a location on the GUI; mapping the pixel's location on the GUI to Earth coordinates of the waypoint; receiving downlink telemetry, including a starting position from a GPS receiver on the UAV, from the UAV through a socket on the remote control device; calculating a heading in dependence upon the starting position, the coordinates of the waypoint, and a navigation algorithm; identifying flight control instructions for flying the UAV on the heading; and transmitting uplink telemetry, including the flight control instructions, through the socket to the UAV.

Summary of Invention Paragraph:
[0011] Many embodiments also include receiving user selections of a multiplicity of GUI map pixels representing waypoints, each pixel having a location on the GUI; mapping each pixel location to Earth coordinates of a waypoint; assigning one or more UAV instructions to each waypoint; storing the coordinates of the waypoints and UAV instructions in computer memory on the remote control device; flying the UAV to each waypoint in accordance with one or more navigation algorithms; and operating the UAV at each waypoint in accordance with the UAV instructions for each waypoint. In such embodiments, operating the UAV at each waypoint in accordance with the UAV instructions also includes identifying flight control instructions in dependence upon the UAV instructions for each waypoint and transmitting the flight control instructions in the uplink telemetry through the socket from the remote control device to the UAV.

Detail Description Paragraph:
[0056] The system of FIG. 1 typically is capable of calculating a heading in dependence upon the starting position, the coordinates of the waypoint, and a navigation algorithm, identifying flight control instructions for flying the UAV on the heading, and transmitting (420) the flight control instructions from the remote control device to the UAV.

Detail Description Paragraph:
[0069] Remote control devices according to embodiments of the present invention typically include automated computing machinery capable of receiving user selections of pixel on GUI maps, mapping the pixel to a waypoint location, receiving downlink telemetry including for example a starting position from a GPS receiver on the UAV, calculating a heading in dependence upon the starting position, the coordinates of the waypoint, and a navigation algorithm, identifying flight control instructions for flying the UAV on the heading, and transmitting the flight control instructions as uplink telemetry from the remote control device to the UAV. FIG. 3 is a block diagram of an exemplary remote control device showing relations among components of included automated computing machinery. In FIG. 3, remote control device (161) includes a processor (164), also typically referred to as a central processing unit or `CPU.` The processor may be a microprocessor, a programmable control unit, or any other form of processor useful according to the form factor of a particular remote control device as will occur to those of skill in the art. Other components of remote control device (161) are coupled for data transfer to processor (164) through system bus (160).

Detail Description Paragraph:
[0084] The method of FIG. 4 includes identifying (418) flight control instructions for flying the UAV on the heading. Flight control instructions are specific commands that affect the flight control surfaces of the UAV. That is, instructions to move the flight control surfaces to affect the UAV's flight causing the UAV to turn, climb, descend, and so on. As an aid to further explanation, an exemplary method of identifying flight control instructions for flying on a calculated heading is provided:

Detail Description Paragraph:
[0087] if current heading is left of the calculated heading, identify flight control instruction: AILERONS LEFT 30 DEGREES

Detail Description Paragraph:
[0088] if current heading is right of the calculated heading, identify flight control instruction: AILERONS RIGHT 30 DEGREES

Detail Description Paragraph:
[0090] when current heading matches calculated heading, identify flight control instruction: FLY STRAIGHT AND LEVEL

Detail Description Paragraph:
[0104] Exemplary methods of navigating a UAV also include flying the UAV to each waypoint in accordance with one or more navigation algorithms and operating the UAV at each waypoint in accordance with the UAV instructions for each waypoint. Operating the UAV at the waypoint in accordance with the UAV instructions for each waypoint typically includes identifying flight control instructions in dependence upon the UAV instructions for each waypoint and transmitting the flight control instructions as uplink telemetry through a socket. Flight control instructions identified in dependence upon the UAV instructions for each waypoint typically include specific flight controls to move the flight control surfaces of the UAV causing the UAV to fly in accordance with the UAV instructions. For example, in the case of a simple orbit, a flight control instruction to move the ailerons and hold them at a certain position causing the UAV to bank at an angle can effect an orbit around a waypoint.

Detail Description Paragraph:
[0128] The method of FIG. 6 includes periodically repeating (610) the steps of, receiving (602) in the remote control device from the GPS receiver a current position of the UAV, and calculating (604) a new heading from the current position to the waypoint. The method of FIG. 6 also includes identifying (606) flight control instructions for flying the UAV on the new heading, and transmitting (608), from the remote control device to the UAV, the flight control instructions for flying the UAV on the new heading. In this method, if Lon.sub.1, Lat.sub.1 is taken as the current position, and Lon.sub.2, Lat.sub.2 is taken as the waypoint position, then the new heading may be calculated generally as the inverse tangent of ((Lat.sub.2-Lat.sub.1)/(Lon.sub.2-Lon.sub.1)).

CLAIMS:

1. A method for navigating a UAV, the method comprising: receiving in a remote control device a user's selection of a GUI map pixel that represents a waypoint for UAV navigation, the pixel having a location on the GUI; mapping the pixel's location on the GUI to Earth coordinates of the waypoint; receiving downlink telemetry, including a starting position from a GPS receiver on the UAV, from the UAV through a socket on the remote control device; calculating a heading in dependence upon the starting position, the coordinates of the waypoint, and a navigation algorithm; identifying flight control instructions for flying the UAV on the heading; and transmitting uplink telemetry, including the flight control instructions, through the socket to the UAV.

5. The method of claim 1 further comprising: receiving user selections of a multiplicity of GUI map pixels representing waypoints, each pixel having a location on the GUI; mapping each pixel location to Earth coordinates of a waypoint; assigning one or more UAV instructions to each waypoint; storing the coordinates of the waypoints and UAV instructions in computer memory on the remote control device; flying the UAV to each waypoint in accordance with one or more navigation algorithms; and operating the UAV at each waypoint in accordance with the UAV instructions for each waypoint, including: identifying flight control instructions in dependence upon the UAV instructions for each waypoint; and transmitting the flight control instructions in the uplink telemetry through the socket from the remote control device to the UAV.

16. A system for navigating a UAV, the system comprising: means for receiving in a remote control device a user's selection of a GUI map pixel that represents a waypoint for UAV navigation, the pixel having a location on the GUI; means for mapping the pixel's location on the GUI to Earth coordinates of the waypoint; means for receiving downlink telemetry, including a starting position from a GPS receiver on the UAV, from the UAV through a socket on the remote control device; means for calculating a heading in dependence upon the starting position, the coordinates of the waypoint, and a navigation algorithm; means for identifying flight control instructions for flying the UAV on the heading; and means for transmitting uplink telemetry, including the flight control instructions, through the socket to the UAV.

20. The system of claim 16 further comprising: means for receiving user selections of a multiplicity of GUI map pixels representing waypoints, each pixel having a location on the GUI; means for mapping each pixel location to Earth coordinates of a waypoint; means for assigning one or more UAV instructions to each waypoint; means for storing the coordinates of the waypoints and UAV instructions in computer memory on the remote control device; means for flying the UAV to each waypoint in accordance with one or more navigation algorithms; and means for operating the UAV at each waypoint in accordance with the UAV instructions for each waypoint, including: means for identifying flight control instructions in dependence upon the UAV instructions for each waypoint; and means for transmitting the flight control

instructions in the uplink telemetry through the socket from the remote control device to the UAV.

31. A computer program product for navigating a UAV, the computer program product comprising: means, recorded on the recording medium, for receiving in a remote control device a user's selection of a GUI map pixel that represents a waypoint for UAV navigation, the pixel having a location on the GUI; means, recorded on the recording medium, for mapping the pixel's location on the GUI to Earth coordinates of the waypoint; means, recorded on the recording medium, for receiving downlink telemetry, including a starting position from a GPS receiver on the UAV, from the UAV through a socket on the remote control device; means, recorded on the recording medium, for calculating a heading in dependence upon the starting position, the coordinates of the waypoint, and a navigation algorithm; means, recorded on the recording medium, for identifying flight control instructions for flying the UAV on the heading; and means, recorded on the recording medium, for transmitting uplink telemetry, including the flight control instructions, through the socket to the UAV.

35. The computer program product of claim 31 further comprising: means, recorded on the recording medium, for receiving user selections of a multiplicity of GUI map pixels representing waypoints, each pixel having a location on the GUI; means, recorded on the recording medium, for mapping each pixel location to Earth coordinates of a waypoint; means, recorded on the recording medium, for assigning one or more UAV instructions to each waypoint; means, recorded on the recording medium, for storing the coordinates of the waypoints and UAV instructions in computer memory on the remote control device; means, recorded on the recording medium, for flying the UAV to each waypoint in accordance with one or more navigation algorithms; and means, recorded on the recording medium, for operating the UAV at each waypoint in accordance with the UAV instructions for each waypoint, including: means, recorded on the recording medium, for identifying flight control instructions in dependence upon the UAV instructions for each waypoint; and means, recorded on the recording medium, for transmitting the flight control instructions in the uplink telemetry through the socket from the remote control device to the UAV.

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L10: Entry 5 of 5 File: USPT May 2, 2000

US-PAT-NO: 6056237
DOCUMENT-IDENTIFIER: US 6056237 A

TITLE: Sonotube compatible unmanned aerial vehicle and system

DATE-ISSUED: May 2, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Woodland; Richard L. K.	Victoria, B.C.			CA

APPL-NO: 08/882368 [PALM]
DATE FILED: June 25, 1997

INT-CL-ISSUED: [07] F41G 7/00, B64C 1/00

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	F41 G 3/02	20060101
CIPS	F41 G 3/00	20060101
CIPS	F42 B 12/02	20060101
CIPS	F42 B 15/10	20060101
CIPS	F42 B 12/36	20060101
CIPS	B64 D 1/00	20060101
CIPS	B64 D 1/02	20060101
CIPS	B64 C 3/56	20060101
CIPS	B64 C 5/00	20060101
CIPS	B64 D 7/00	20060101
CIPS	B64 C 5/12	20060101
CIPS	B64 C 39/00	20060101
CIPS	B64 D 33/02	20060101
CIPS	B64 C 3/00	20060101
CIPS	B64 C 39/02	20060101
CIPS	B64 D 33/00	20060101
CIPS	B64 C 3/40	20060101
CIPS	B64 D 7/08	20060101
CIPS	F42 B 15/00	20060101

US-CL-ISSUED: 244/3.15; 244/120
US-CL-CURRENT: 244/3.15; 244/120, 244/49, 244/58

FIELD-OF-CLASSIFICATION-SEARCH: 244/3.15, D12/16.1, 102/393, 102/405, 114/21.2, 114/21.1, 114/21.3, 114/316, 89/1.8, 89/1.11, 89/1.54, 89/1.55
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected | Search ALL | Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	D317003	May 1991	Tribe et al.	D12/333
☐	2992794	July 1961	Boyd	244/3.15
☐	3916759	November 1975	Jones et al.	89/1.814
☐	5615847	April 1997	Bourlett	244/3.15

ART-UNIT: 364

PRIMARY-EXAMINER: Poon; Peter M.

ASSISTANT-EXAMINER: Ducker, Jr.; Charles R

ATTY-AGENT-FIRM: Bullock; Roddy M.

ABSTRACT:

The present invention is generally comprised of a sonotube-compatible unmanned aerial vehicle apparatus, hereinafter referred to as a UAV, and systems for launch and control of the UAV. The UAV is generally comprised of modular sections including a nose section, a payload section, a wing and fuel tank section, and a powerplant section. The modular sections are attached to adjacent sections by uniform lock sealing rings and related components. The present invention comprises an apparatus enabling very small, man portable, ballistically launched, autonomously or semi-autonomously controlled vehicle to be deployed with preprogrammed, communicated, or telemetry mission programming. A wide range of payload packages, including emergency supplies, sensors, and antenna assemblies, may be carried, used or deployed in flight. Man-portable operation is accomplished by the use of a launch canister apparatus. The launch canister comprises retractable launch stabilizing legs, turbine engine exhaust orifices, and various antennas. The launch canister apparatus alternatively comprises a modified type "A", "B", or "C" sonotube launch canister. The system of the invention also comprises a portable Command, Control, Communications, Computer, and Intelligence (C4I) control and sensing analysis console. The console is preferably ruggedized, waterproof, shockproof, and comprises necessary control and analysis computers, input/output devices, antennas, and related hardware and software for vehicle and mission control. A C4I console and/or launch canisters may be transported by means of a backpack adapted for man portability.

26 Claims, 48 Drawing figures

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☐ 1. Document ID: US 20060167622 A1

L10: Entry 1 of 5 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167622
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167622 A1

TITLE: Navigating UAVs in formations

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/206; 701/3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 2. Document ID: US 20060167599 A1

L10: Entry 2 of 5 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167599
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167599 A1

TITLE: Identifying a UAV landing location

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/16; 340/947

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 3. Document ID: US 20060167597 A1

L10: Entry 3 of 5 File: PGPB Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060167597
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060167597 A1

TITLE: Enabling services on a UAV

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin; William Kress	Austin	TX	US
Redman; Jesse	Cedar Park	TX	US
Thorson; Derral Charles	Austin	TX	US

US-CL-CURRENT: 701/3; 701/206

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 4. Document ID: US 20050094851 A1

L10: Entry 4 of 5 File: PGPB May 5, 2005

PGPUB-DOCUMENT-NUMBER: 20050094851
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050094851 A1

TITLE: Navigating a UAV with telemetry through a socket

PUBLICATION-DATE: May 5, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bodin, William Kress	Austin	TX	US
Redman, Jesse J.W.	Cedar Park	TX	US
Thorson, Derral C.	Austin	TX	US

US-CL-CURRENT: 382/106; 343/705, 382/107, 382/108, 382/154, 398/121, 701/2, 701/3, 701/36

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

☐ 5. Document ID: US 6056237 A

L10: Entry 5 of 5 File: USPT May 2, 2000

US-PAT-NO: 6056237
DOCUMENT-IDENTIFIER: US 6056237 A

TITLE: Sonotube compatible unmanned aerial vehicle and system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw D

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Terms	Documents
L9 and socket$	5

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